CONTENTS

Volume 24, Issues 1–6

International Journal of
MATHEMATICAL EDUCATION in SCIENCE and TECHNOLOGY

Issue No. 1, JANUARY

On the correlation between the linear and quadratic discriminant functions. A. S. S. DORVLO 1

A note on the improper use of a formula for Fibonacci numbers. P. FILIPPONI, O. BRUGIA and A. F. HORADAM 9

A comparison of assessment by closed book and open book tests. P. A. PHIRI 23

Estimation of the error implicit in modelling multisubstrate biochemical reactions as lumped-substrate systems. F. X. MALACATA 27

Sumudu transform: a new integral transform to solve differential equations and control engineering problems. G. K. WATUGALA 35

Using *Mathematica* to teach Bessel functions. R. C. GILBERT and J. MATHEWS 45

Density-dependent birth and death processes with immigration. P. R. PARTHASARATHY and B. K. KUMAR 55

About Hausdorff–Besicovitch-dimension d_{HB}. H. ZEITLER 63

A 'derivation' of the Laplace transformation. S. D. AGASHE 73

Non-decimals: fractions in bases other than ten. R. ZAZKIS and D. WHITKANACK 77

Discovering relationships and patterns by exploring trapezoidal numbers. P. W. HAGGARD and K. L. MORALES 85

Some further infinite products. L. SHORT 91

A closed-form formula for the inverse of the *nivellateur* in the solution of Sylvester's matrix equation. A. J. B. WARD 101

A simple algorithm for fitting measured data to Fourier-series models. M. T. ABUELMA'ATTI 107

The free vibration of the finite string by the method of images. Y. M. RAM and J. CALDWELL 113

Rain problem for a moving object. M. PAKDEMIRLI and C. ALACACI ... 121

Fitting a circle to numerical data: an illustration of statistical modelling. P. J. PEDLER 131

Classroom notes 145

Issue No. 2, MARCH

Corrected summation of alternating series. J. GAL-EZER and G. ZWAS ... 171

A stochastic model for manpower development in an organization: A series queue approach. U. H. ETUK and E. C. NDUKA 177

How can one distinguish between an elephant herd and a herd of 2-dimensional spheres? O. J. GARAY 183

A unifying generalization of Turnbull's theorem. M. DE VILLIERS 191

Finding mathematical patterns in chaos. K. S. GORDON 197

Diagnosing students' difficulties in learning mathematics. D. TALL and M. R. RAZALI 209

A core curriculum in mathematics for the European engineer: an overview. M. D. J. BARRY and N. C. STEELE 223

The design of microworlds in geometry based on a two-dimensional graphics system devised for secondary education. H. SCHUMANN 231

Scattering of electromagnetic plane waves by an arbitrary dielectric infinite cylinder. C. KUMAR and D. L. JAIN 251

A problem reconsidered. L. SHORT 267

Predicting educational performance at tertiary level on the basis of secondary level performance. U. H. ETUK 283

Note on 'low-frequency scattering of acoustic plane waves by an arbitrary penetrable cylindrical obstacle'. C. KUMAR and D. L. JAIN 289

Vector-product identities in n-space. J. D. O'KEEFFE 295

To prove, why and how? A. G. VAN ASCH 301

Classroom notes 315

Issue No. 3, MAY

Random points in circles and Mathematica. L. RÅDE 329

On maximal and minimal triangular planar graphs: an optimization approach. S. C. K. CHU 337

Solving the problem of physics problem solving. E. SCANLON 349

Bounds for the standard deviation for grouped data. R. E. SHIFFLER and J. R. LACKRITZ 359

Non-linear proportionality in science problems. P. N. G. GILL 365

On velocity–independent potentials. E. A. NOTTE CUELLO and E. CAPELAS DE OLIVEIRA 373

How to share equally by cyclic exchange. MAN-KEUNG SIU 377

Line graphing ability of some Nigerian secondary science students. G. O. M. ONWU 385

Iteration and bilinear transformations. L. SHORT 391

A mapping theorem for compact metric spaces. M. LYNCH 413

On relatively prime numbers and oil drops. G. L. COHEN 417

Applications of ergodic chains to problem solving. S. C. PERDIKARIS ... 423

Individual development and historical development: a study of calculus. R. P. BURN 429

Some disgraceful graphs. M. A. SEOUD and R. J. WILSON 435

Measuring problem-solving skills. M. G. VOSKOGLOU and S. C. PERDIKARIS 443

Solutions and representations by iterated radicals. A. ABIAN and S. SVERCHKOV 449

Simple parallel algorithms for primality testing and integer factorization. S. Y. YAN 457

Algebraic enumeration of molecular formulae for given molecular weight. T. MORIKAWA and Y. TADA 467

Students' intuitive understanding of gravity. T. GRAHAM and J. BERRY ... 473

Classroom notes 479

Letter to the Editor 497

Issue No. 4, JULY

Numbers and colours. M. CORIAT-BENARROCH, P. S. MARTÍNEZ-LÓPEZ and J. BAENA-RUIZ 501

On achievements in mathematics and physics and some conglomerate factors inhibiting effectiveness in learner performance. DAN O. IHEJIETO and R. E. NWOKEDI 511

Presenting the negative hypergeometric distribution to the introductory statistics courses. K. C. CHAE 523

Michaëlis–Menten kinetics: explicit dependence of substrate concentration on reaction time. A. C. FREITAS and F. X. MALCATA 527

A three-dimensional Hilbert curve. H. SAGAN 541

Modelling in tertiary level mathematics in some developing countries. R. K. BHATTACHARYYA 547

Fostering auto-learning abilities in mathematics: A Greek experience. C. TOUMASIS 553

Mathematics courses with a PC. A. C. NYONDO 569

A novel proof of Roth's removal rule. A. J. B. WARD 575

Attitudes towards instruction of faculty in mathematics and the physical sciences. N. HATIVA 579

Forced motion in water due to a nearly cylindrical wavemaker. D. P. DOLAI and B. N. MANDAL 595

Classroom notes 603

Issue No. 5, SEPTEMBER

The durations of *m* projects for achieving minimization of cost and optimal resource allocation. M. N. TRYPIA 611

Stirred tanks: a didactic tool. J. ASENCOR, J. M. GRACIA and I. DE HOYOS 617

Families of separable partial differential equations. G. B. COSTA and L. E. LEVINE 631

Solving nonlinear programming problems involving discrete, integer, and continuous variables. JSUN Y. WONG 637

Maximal and minimal ideals of convergence semigroups. SHING-SEUNG SO 647

Constructivism and mathematical education. L. MORENO-ARMELLA and G. WALDEGG 653

The use of error expansions in simple iteration. L. SHORT 663

Teaching differentiation in normed spaces. M. KLIMEK 679

What is the fundamental theorem of integral calculus? C. TOUMASIS ... 685

A new approach to mathematics for engineers. A. J. P. WATKINS ... 689

An approach to transfer functions, delta functions and convolution. B. L. BURROWS, D. J. COLWELL and J. R. GILLETT 703

A comparison of the effects of constant co-operative grouping versus variable co-operative grouping on mathematics achievement among seventh grade students. L. I. COURCIER and L. J. STEPHENS 711

The importance of initial conditions. L. SHORT 717

On the success of a self-paced course. R. A. D'INVERNO 727

Nonlinear optimization of constrained functions using tabu search. J. A. BLAND 741

Computer science students perceptions of learning formal reasoning methods. P. FUNG, T. O'SHEA, D. GOLDSON, S. REEVES and R. BORNAT 749

Classroom notes 761

Issue No. 6, NOVEMBER

Invariant linear operators and Fourier analysis. N. C. BOBILLO-ARES ... 773

Some abstract algebra from the elementary calculus course. B. J. GARDNER 781

New technology: an example of the potential to influence the mathematics curriculum. D. N. BURGHES 791

Humanizing the multiple-choice test with partial credit. B. M. CHERKAS and J. ROITBERG 799

Mathematica and the power method. T. DE ALWIS 813

Do inviscid vortex sheets roll-up? R. K. BERA 825

Which tariff?. M. RYCRAFT 833

Conversations surrounding bases. R. KANTROWITZ 839

Random pixels. J. ASENCOR, J. M. GRACIA and I. DE HOYES 843

Delivering the shape and space programme of study in the UK national mathematics curriculum using Zeno. H. G. MORRISON, J. GARDNER and C. MCBRIDE 853

Sums of powers of integers—A review. T. C. T. KOTIAH 863

Semi-Markov compartmental systems with branching particles. B. KRISHNA KUMAR and P. R. PARATHASARATHY 875

A student-centred approach to group theory. D. HOLTON and J. WENZEL 883

Solution of Fredholm integral equations by conversion to known transforms. W. COX... 889

Randomness—a key concept. D. R. GREEN 897

Classroom notes 907

Author index 927